

**ASSESSING THE  
FIRE INVESTIGATION AND  
FIRE CODE ENFORCEMENT  
PRACTICES OF  
ARKANSAS FIRE DEPARTMENTS**

EXECUTIVE LEADERSHIP

JUNE, 1999

Edward V. Davis

Hot Springs Fire Department

Hot Springs Arkansas

## ABSTRACT

The problem facing fire jurisdictions in Arkansas is that they receive little or no training or intervention from the state regarding fire code enforcement, fire cause investigations and or the necessary training to support these activities.

The purpose of this applied research project was to identify the current fire code enforcement and fire investigation practices of surveyed Arkansas Fire Departments.

A historical research methodology was employed to gain information concerning the past practices of the Arkansas Fire Marshal's Office. A descriptive research methodology was used to analyze the fire investigation and fire code enforcement practices of Arkansas Fire Departments. The descriptive research methodology was designed to generate data that would answer the following research questions:

1. Are Arkansas Fire Departments capable of conducting fire code enforcement activities?
2. Are Arkansas Fire Departments conducting the fire code inspection activities required by Act 411 of 1989 ?
3. What are the fire investigation practices of Arkansas Fire Departments?
4. What fire code enforcement and fire investigation services are needed by Arkansas Fire Departments from the Arkansas Fire Marshals Office?

A survey concerning fire investigation and fire code enforcement practices was mailed to all nine hundred eighteen fire departments known to exist in the state of Arkansas. The results of this research project illustrate that the majority of Arkansas Fire Departments responding to the survey are incapable

of adequately fulfilling the tasks of fire code enforcement and fire investigation. Proactive legislative action is required to impact the problem and bring about proper levels of staffing and an increase in funding for the Arkansas Fire Marshal's Office.

## TABLE OF CONTENTS

Abstract.....	2
Table of Contents.....	4
Introduction.....	5
Background and Significance.....	6
Literature Review.....	11
Procedures.....	15
Limitations.....	16
Definitions of Terms.....	16
Results.....	17
Discussion.....	23
Recommendations.....	27
Reference List.....	28
Appendix A.....	30

## INTRODUCTION

The Fire Prevention Act, Act 254 of 1955 places the responsibility for fire code enforcement and fire cause and origin investigations in the State of Arkansas under the domain of the Arkansas Fire Marshal's Office (AFMO), a division of the Arkansas State Police (ASP). Additionally, the Fire Prevention Act of 1955, in Section 12-13-102, designates all fire fighters in the State of Arkansas whose organizations receive public funds as ex officio deputy fire marshals. Since the AFMO is only staffed by four full time employees, it is incapable of fulfilling the legislative mandate that it was created to fulfill. By default, the responsibility for the enforcement of the state fire code and the investigation of fires lies squarely upon the state's fire fighters and the jurisdictions with which they are associated. In the absence of a regular program of fire inspections and code enforcement by the State of Arkansas it could easily be assumed that local fire jurisdictions are providing these services.

The problem initiating this research project was that fire jurisdictions operating in Arkansas receive little or no support from the state regarding fire code enforcement, fire cause investigations and or the necessary training to support these activities.

The purpose of this applied research project was to identify the current fire code enforcement and fire investigation practices of Arkansas Fire Departments.

A descriptive research methodology was employed as the means of analyzing the practices Arkansas Fire Departments concerning matters of fire code enforcement and fire origin and cause investigations. This analysis was accomplished via an opinion survey mailed to every fire department

known to exist in the State of Arkansas. The survey was designed to generate data that would answer the following research questions:

1. Are Arkansas Fire Departments capable of conducting fire code enforcement activities?
2. Are Arkansas Fire Departments conducting the fire code inspection activities required by Act 411 of 1989 ?
3. What are the fire investigation practices of Arkansas Fire Departments?
4. What fire code enforcement and fire investigation services are needed by Arkansas Fire Departments from the Arkansas Fire Marshals Office?

#### BACKGROUND AND SIGNIFIGANCE

The City of Hot Springs is a community of 32,192 people. Its fire department is staffed by seventy five uniformed personnel assigned to the suppression division, two uniformed personnel assigned to the fire prevention division and one uniformed person assigned to training. The City of Hot Springs is isolated from other cities of comparable size. The largest incorporated city in five surrounding counties, Hot Springs is the primary trade area for persons residing in these localities. Hot Springs' economy is based on tourism, retail sales and light manufacturing. Contained within its borders are twenty six structures greater than five stories tall, numerous resorts and large mercantile occupancies. These occupancies often present challenging code enforcement and fire investigation scenarios to the local fire marshals who would benefit from the knowledge of a fire protection or mechanical engineer. Unfortunately, the small size of the City of Hot Springs does not justify the hiring of qualified personnel for such specialties. A logical place to find such assistance would be the AFMO. In this particular

instance logic has not prevailed in the struggle to obtain funds for such positions. The Arkansas State Fire Marshal and his secretary are the only permanently assigned staff members in the AFMO. Two arson dog handlers working out of the criminal investigation division have, in the past, worked to assist local fire departments with their fire scene investigations. This program is scheduled to be ended on February 2, 2000 when, due to cutbacks in the budget of the ASP, the arson dog program is scheduled to be terminated. The identified problem is a lack of commitment on the part of the State of Arkansas concerning fire code enforcement and fire investigations.

This lack of commitment is often troublesome to the City of Hot Springs and occasionally manifests itself when a merchant either moves his business into or is annexed from the county to the city. The statewide coverage of the Arkansas Fire Prevention Code (AFPC) is meant to ensure a smooth code enforcement transition in such situations. For example an auto body shop should be consistently regulated regardless of whether its location is in an incorporated city or the county. Often the reality of the situation is that a business person wants continue painting vehicles without the benefit of a spray booth or fire protection system. Business owners are often bewildered because certain activities or processes they have been conducting in the county must be modified or halted upon their annexation into the city limits. Explaining to a newly annexed business person that the AFPC has had statewide jurisdiction since 1955 seems somewhat hollow when his competitors located outside the city limits are under the same code yet not subjected to the same level of code enforcement.

The Fire Prevention Act, Act 254 of 1955 established the AFMO as a subdivision of the ASP. This legislation represented the first meaningful effort by the State of Arkansas to establish an

organization dedicated to the prevention of fire and the enforcement of fire related laws and codes. The Fire Prevention Act of 1955 is a statute that delegates a broad range of fire related duties and responsibilities to the State Fire Marshal and the Enforcement Section that he oversees.

AR. Stat. Ann.12-13-105. Duties of the State Fire Marshal, Enforcement Section.

The State Fire Marshal Enforcement Section shall have the responsibility to:

- (1) Provide sufficient training to the several deputy fire marshals in the State of Arkansas to enable them to better understand their duties and their authority and to better motivate them to perform their duties in an effective and efficient manner; (2) Coordinate fire prevention efforts with other agencies or groups; (3) Develop and present public awareness programs in fire prevention and protection; (4) Develop and disseminate fire prevention information and material; (5) Enforce the fire prevention code and periodically revise and update such code; (6) Investigate fires of a suspicious nature in the state; and (7) Do and perform such other functions as will promote an efficient and effective fire prevention and control program in the state.

A reorganization of the ASP in the late 1960's referenced in a memorandum written by Colonel William Miller dated December 6, 1971, seems to predict the future state of affairs of the AFMO. Prior to the reorganization, two investigators assigned to the Little Rock Office were tasked with investigating fires and conducting fire inspections in public buildings throughout the State of Arkansas. The reorganization assigned the duties of fire investigation and fire prevention inspections to the thirty field

investigators stationed at various locations throughout the state. This line of thought seemed to be a logical response to the problem of how to deliver fire related services by the ASP. Cultural differences and the additional burden of new responsibilities made acceptance of these new roles by the field investigators tenuous at best. In the memorandum dated November 19, 1971, Captain W.A. Tudor acknowledges these problems. "I realize that inspection work is distasteful to the majority of you, but I cannot emphasize the importance of this work as a protection of the public's safety."

The organizational structure brought about under the reorganization apparently did not function in a satisfactory manner. Captain Bill Young stated in his report, "Duties and Responsibilities, Assessment of Compliance" dated February 25, 1996, that "By the mid nineteen seventies there were no less than six fire marshal investigators stationed throughout the state of Arkansas (p.2)." The duties of these investigators were fully dedicated to fire related investigation and enforcement issues. This staffing arrangement proved to be no more permanent than those produced under past reorganizations. By 1996 the number of personnel permanently assigned to the AFMO had dwindled to two persons, one lieutenant and one secretary (Young, 1996, p.2).

Fire protection services within the State of Arkansas are delivered to the public primarily by volunteer fire departments. These fire departments are mainly what is termed "subscription fire departments" meaning that the fire department, having jurisdiction over a particular locality, will bill the home owners yearly for fire protection services. These fire departments are private, not for profit entities that operated independently of local government. These fire departments and their members were not considered ex officio deputy fire marshals prior to 1991 because they received no public

funds. Under subchapter 1, definition 8 of the Fire Prevention Act, Act 254 of 1955 “members of fire departments” includes the personnel of all departments supported wholly or partially by public funds. This meant that these fire departments were not recognized code enforcement entities. This status changed with the passage of Fire Protection Services Program Act, Act 833 of 1991. Act 833 established a premium tax charged on each insurance policy written in the State of Arkansas. Collections of this tax were then deposited in the Fire Protection Premium Tax Fund and disbursed to the counties at rate equal to each counties percentage of the states overall population. Of the states nine hundred eighteen fire departments, seven hundred eighty one receive some funding from the Fire Protection Premium Tax Fund (personal communication, Sandy Jeffries, December 17, 1999).

Although empowered to enforce the fire code and investigate the cause of fires, many rural fire departments approach these duties with some reluctance. Few rural fire departments have any career personnel. Training classes in fire investigation techniques and fire code enforcement procedures are not conveniently accessible. In his report titled “Duties and Responsibilities, Assessment of Compliance”, Captain Bill Young of the ASP stated that “Much of the inspection program is done by local fire marshals, but rural areas almost without exception do not have qualified inspectors” (1999, p. 6).

The Executive Leadership course designated problem identification as the first step in the process of developing a successful response to the needs of any particular situation. This research paper is designed to identify the problems associated with the absence of code enforcement and fire investigation programs sponsored by the State of Arkansas. The information derived from this research will be used to influence state political leaders and to educate them concerning the problems associated

with the enforcement of fire related laws and codes. The future well being of Hot Springs' Fire Department and the Arkansas Fire Service will depend to a great extent on the strength or weakness of the AFMO.

## LITERATURE REVIEW

NFPA 1031, the Standard for Professional Qualifications for Fire Inspector and Plan Examiner (1998), defines the professional competencies needed by individuals whose task it is to conduct fire code enforcement activities. The base of requisite skills and knowledge required to function effectively at the level of Fire Inspector I are described in twenty six entries listed in Chapter 3. These skills are primarily based on an individual's ability to interpret codes and to use sound judgment in making code related decisions. The means of attaining the technical knowledge required of a Fire Inspector I is not defined in NFPA 1031.

NFPA 1033, Professional Qualifications for Fire Investigators (1998), defines the necessary skills need by a fire investigator. These skills are defined in a manner similar to those found in NFPA 1031. Requisite knowledge and skills are used to define the job performance requirements of a fire investigator. At this point the similarities between the two standards end. NFPA 1033 is not arraigned in graduated levels of knowledge similar to NFPA 1031. All required professional competencies are listed under a single heading entitled Fire Investigator in chapter three of the standard (1998).

The most likely source of training to attain the requisite knowledge and skills necessary to perform fire investigations and to conduct the process of fire code enforcement in the State of Arkansas

would be the Arkansas Fire Academy (AFA). A check of the Spring 2000 Training schedule revealed that of twenty six training offerings none were wholly dedicated to the process of fire code enforcement. The AFA fared better in scheduling classes dedicated to the process of fire investigation. Two classes: Fire Arson Investigation and Arson Detection were listed on the Spring 2000 schedule (Fire Watch, 1999). To be fair to the AFA two of their classes, Private Fire Protection Systems and Fire Prevention for Small Fire Departments, a National Fire Academy Outreach Course, have some areas of applicability to fire code inspection activities (Fire Watch, 1999). Although not currently training the state's firefighters in how to use the AFPC, copies of the fire code may be purchased from the AFA for \$99.00 (Ray Carnahan, personal communication, May 7, 1999).

The AFPC is the most important component in any code enforcement scenario. Without access to the fire code, the process of fire code enforcement is made difficult. In Garland County Arkansas there are eleven fire departments, ten of which were contacted to determine if they had a copy of the AFPC. Six of these ten fire departments did not have a copy of the AFPC. Lack of access to the AFPC is not limited to the subscription fire departments. A check of the Garland County Library revealed that it's collection had no editions of the AFPC. The library held copies of the building, electrical and plumbing codes, but no editions of the AFPC.

Much like the Garland County Library, fire service periodicals are filled with many articles concerning interesting and useful topics. The abundance of information concerning fire suppression tools, techniques and procedures is overwhelming. Conversely, the lack of information in these same publications concerning fire code enforcement practices is

disappointing. However, fire code enforcement articles were found in some of the widely circulated fire service periodicals. Fire Engineering included two excellent articles in their February 1999 issue, both devoted to the process of code enforcement. These dealt with how to conduct inspections of movie theaters (Corbett), and how inspect hazardous materials storage facilities (Naylis).

Magazines like Fire Engineering are among the most influential sources of outside information in many fire departments. The inclusion of an occasional code enforcement article reminds fire departments about the need for inspection and code enforcement activities.

Remotely related articles found during the literature review concerning the subject of inspections were similar in content and dealt with the process of pre fire planning. Among these articles was a continuing series featured in Fire Engineering magazine entitled “Preplanning Building Hazards”. Authored by Francis Brannigan (1999), these articles are a primer to Brannigan’s book, Building Construction For The Fire Service. In his Fire Engineering articles Brannigan presents commonly encountered building materials and construction techniques in a manner that is easily understandable. Brannigan’s articles, although not a fire code enforcement guide, are written from a fire fighter friendly perspective. Brannigan’s work ties tactical considerations to the code enforcement and design decisions made prior to and during construction, thus emphasizing the importance of code compliance activities.

Although some of the available periodicals do little to guide would be fire department inspectors in the process of conducting inspections, there are numerous articles in fire service periodicals devoted to fire investigation. In particular, the August 1998 issue of Fire Chief magazine featured two articles

concerning fire investigation (Brannigan) and arson intervention programs (Almond). In July of 1999 Fire Chief again featured two articles concerning the use of computer software to train fire investigators (Duval) and how to recognize filicide at fire death incidents involving children (Huff).

A multitude of texts, standards and code books are available on the subjects of fire cause investigation and on the process of conducting fire code enforcement inspections. The NFPA Inspection Manual ,Seventh Edition (1998), covers the most common problems inspectors are likely to encounter during the process of conducting inspections. The Inspection Manual also identifies the necessary NFPA Standards applicable to specific code compliance issues. NFPA 921, Guide for Fire and Explosion Investigations (1998), is a structured step by step fire investigation guide that is comprehensive and systematic. Other available texts, such as Kirk's Fire Investigation (Dehaan,1991), are more explanatory of the process of fire investigation and would make an excellent companion text to NFPA 921.

In the information age there are many sources of information generally available to the fire service concerning fire investigation and fire code enforcement. Since there are only requisite knowledge and skill requirements and no specific training achievements specified to meet the criteria of NFPA 1031 and 1033, it is possible that self taught, capable fire code enforcement and fire investigation personnel are enforcing the AFPC and investigating fires in their jurisdictions throughout the State of Arkansas.

## PROCEDURES

A historical means of research was initially employed during the process of identifying factors that influence the code enforcement and fire investigation practices of the Arkansas Fire Service. A literature review was conducted to ascertain the history of the AFMO and to identify resources available to guide fire code inspectors in the process of code enforcement. Personal and telephone interviews were conducted with the Arkansas State Fire Marshal, Lieutenant Ray Carnahan of Little Rock Arkansas.

The information derived from the historical research process prompted an informal telephone survey to determine the accessibility of the AFPC to fire departments in Garland County Arkansas. The results of this cursory study prompted the application of a descriptive research methodology in the form of a survey mailed on November 22, 1999 to all 918 fire departments known to exist in the State of Arkansas. The addresses of surveyed fire department were drawn from the Arkansas Fire Department data base provided by State Fire Marshal Ray Carnahan.

This survey was composed of ten closed ended questions which were answered by choosing either true or false. One forced choice question was also included. The forced choice question contained ten different services that the State Fire Marshal's office is tasked with offering. Respondents assigned a number value from one to ten to each these services. The number one representing the services most important to the respondent and the number ten representing the services least desired. Information from the survey was analyzed and used to answer the research questions posed in the Introduction section of this research project.

## LIMITATIONS

The results of the survey do not meet the requirements needed to assure a 95% level of confidence. Nine hundred eighteen surveys were mailed to Arkansas Fire Departments. One hundred and sixteen surveys were returned during the course of the research. To attain a 95% level of confidence two hundred and seventy four surveys would need to have been completed and returned. Although the information produced by this research project will be helpful when the battles over funding for the AFMO are fought. The results cannot be categorized as a truly accurate representation of the code enforcement and fire cause investigation practices of the Arkansas Fire Service. It would be irresponsible to cast the results of this survey as being representative of anything other the practices of the particular fire departments that participated in the survey.

## DEFINITION OF TERMS

- Subscription Fire Departments - A fire department having jurisdiction over a particular locality that bills the home owners yearly for fire protection services. These fire departments are private, not for profit entities that operate independently of local government.
- Fire Department Pre Planning - An operational plan prepared prior to the occurrence of fire that identifies factors that will directly influence the outcome of fire suppression efforts in the occupancy being planned.

Private Fire Protection Systems-	Any fire protection system maintained by the owner of the property it is meant to protect. Examples include water based fire sprinkler systems, foam sprinkler systems, underground piping, fire pumps, standpipes etc.
Fire Code Inspector-	An individual whose duty it is to conduct fire code enforcement inspections and by applying codes and standards to the existing conditions found in the structure.
Arkansas Fire Prevention Code-	A code dedicated to the regulation of activities in a manner that will reduce the possibility of the occurrence of fire. Applies only to areas within the geographical boundaries of the State of Arkansas.
Arkansas State Fire Marshal-	The authority responsible for the enforcement of fire related laws and codes in the State of Arkansas.

## RESULTS

1. Are Arkansas Fire Departments capable of conducting fire code enforcement activities?

Survey questions one through six were designed to gain insight regarding the fire code enforcement capabilities, practices and levels of training within the Arkansas Fire Service. The survey of Arkansas Fire Departments did not reveal a high level of confidence concerning their abilities to accomplish fire code enforcement tasks. Although fifty five percent of respondents to question one felt

that at least one person on their fire department could correctly interpret and apply the AFPC, only forty six point five percent of responding departments had immediate access to a copy of the AFPC. A clear majority of fire departments, fifty three point five percent, did not have easy access to a copy of the basic document to be used in matters of code enforcement. These departments viewed the AFPC as either irrelevant to their operations or at the least the code was viewed as being of lesser importance. Fire departments are apparently not alone in their devaluation of the importance of fire code enforcement. Fifty six point nine percent of respondents stated that there were no qualified inspectors available to them in their respective counties to resolve fire and building code violations.

As noted in the literature review training, qualifications and requisite skills play an important role in the making of a fire inspector. Although fifty five point two percent of fire departments stated that at least one member of their fire department could correctly interpret and apply the AFPC. These numbers dwindled as qualifying statements were applied in the consecutive questions. Questions concerning access to the AFPC and the presence of qualified inspectors being available in Arkansas Counties fell into the mid and lower forties respectively. Further erosion occurred when question five was applied to these same departments. Meant to be a means of validation for the answers supplied to the preceding questions, question five was included to establish the level of code based training programs the members of Arkansas Fire Department's had attended through the National Fire Academy or the Southern Building Code Congress. This question reduced the number of fire departments with trained qualified inspectors to nineteen point eight percent. It is important to note that fire inspectors are not required to have any level of formal training. Requisite knowledge and skills are all that is required to meet the

requirements of NFPA 1031. It is none the less significant that under twenty percent of fire departments responding to this survey have personnel who are trained to carry out the task of conducting fire code inspections. Regardless of how inspectors have attained their skills, the vast majority of Arkansas Fire Departments are not served by a fire inspector at any skill level.

From the data collected during the process of this survey, it is evident that a majority of participating fire departments are for numerous reasons incapable of conducting fire code enforcement activities. A lack of fire code related skills coupled with a lack of access to the fire code renders more than half of the states fire departments impotent in code related matters. In the last section of the survey, respondents assigned a numerical value to ten forced choice options. Code enforcement training and fire code enforcement assistance were identified as the third and fourth most important services needed by the Arkansas Fire Departments.

2. Are Arkansas Fire Departments conducting the fire code inspection activities required by Act 411 of 1989?

Survey question six and the numerical value assigned to the forced choice option listed as “Educational Occupancy Inspections” by respondents revealed the lack of priority placed on the issue of fire code enforcement by fire departments in the State of Arkansas. Sixty two point two percent of Arkansas Fire Departments responding to survey question six do not have a regular program of inspections dedicated to the fire safety of daycare and educational occupancies. These inspections are a required function of the Arkansas Fire Departments under Act 411 of 1989 . Fire Safety inspections are also a licensing component tied to the issuance of daycare licenses issued by the Arkansas Department

of Human Services. It is difficult to see how daycare centers located in the fire jurisdictions that do not conduct fire safety inspections are ever licensed. It is interesting to note that the number of fire departments who have a regular program of inspections that targets daycare and educational occupancies is thirty eight point eight percent. Although not directly matching the forty one point four percent of jurisdictions who responded that they had a least one member who was adequately trained to enforce the AFPC, these numbers seem to show that only those jurisdictions that have confidence in the ability of their personnel concerning matters of code enforcement are even bothering to attempt the process of daycare and educational occupancy inspections.

Questions one through four are interesting because they allow respondents to evaluate the condition or capability of their organization based on their opinion. Validation questions such as questions five and six set measurable finite criteria that forces respondents make choices based on the condition of their organization compared to accepted standards. In this case a majority of Arkansas Fire Departments are not conducting even the minimal number of fire safety inspections that are required by Arkansas Law.

3. What are the fire investigation practices of Arkansas Fire Departments?

Eighty one point nine percent of fire departments responding to question seven of this survey stated that they normally conduct fire origin and cause investigations at the scene of every structure fire. Conversely, eighteen point one percent of respondents stated that their fire departments did not normally conduct origin and cause investigations at structure fires. Sixty six percent of respondents to question eight reported that at least one member of their fire department was adequately trained to

conduct a fire origin and cause investigation. It is important to note that if these percentages are accurate fifteen percent of Arkansas Fire Departments could be conducting fire origin and cause investigations with personnel who are not adequately trained to conduct such operations. Question ten queried respondents about the availability of qualified fire investigators in their counties that are available to fire departments for the purpose of conducting fire investigations. Fifty seven point eight percent of respondents answered positively.

Nestled unobtrusively between questions eight and ten was another validation question. This particular question, innocuous in its nature, provided some insight into the quality and reliability of the responses to other fire investigation related questions. Question nine asked if it was a standard operating procedure on the respondents fire department to use NFPA 921 as a guide to conduct fire origin and cause investigations. Sadly, only thirty seven point one percent of fire departments responding to this survey use NFPA 921 as a fire investigation guide. One point seven percent of those surveyed had no response to this question and sixty one point two percent of departments responses were negative concerning the use of NFPA 921 to conduct fire investigations. Eighty one point nine percent of fire departments are conducting fire investigations and thirty seven point one percent of those departments are employing NFPA 921, we are left to conclude that forty four point eight percent of fire departments surveyed are conducting fire investigations without using accepted investigation techniques. This calls into question the validity of the answers respondents gave to question eight concerning the number of adequately trained fire investigators in Arkansas Fire Departments. Considering the widespread

acceptance of NFPA 921 and it's almost universal employment in fire investigations, doubt is cast upon the quality of the fire investigations being conducted by Arkansas Fire Departments.

Although a vast majority of fire departments have stated that they are conducting fire origin and cause investigations and have access to trained investigators the quality of these investigations is in doubt. The low utilization of NFPA 921 causes these investigation practices to be viewed dubiously.

4. What fire code enforcement and fire investigation services are needed by Arkansas Fire Departments from the AFMO?

The respondents to this survey, chose fire investigation training as the most important service needed from the AFMO. Seventy seven points separated fire investigation training from the second most critical need of the fire service, fire origin and cause investigations. The importance placed on fire origin and cause training and fire investigations in comparison to the data derived from question nine shows that although NFPA 921 is not being employed by a majority of fire departments responding to this survey, respondents do recognize their need for training and assistance with fire cause investigations in their jurisdictions.

Similar in order to the number one and number two rated choices, choices three and four were code enforcement training and fire code enforcement. It is noteworthy to grasp that training concerning how to conduct fire code enforcement inspections has been rated above having the service performed by the AFMO. This demonstrates a high level of desire on the part of respondents to learn how to conduct these procedures.

The fifth most important service that could be offered to the fire service was flammable liquids storage tank inspections. The location of this service in the fifth position is understandable due to its intermittent occurrence and past lack of involvement of the local fire service in dealing with these problems.

Educational occupancy inspections and daycare inspections rated numbers six and seven respectively. The lack of action on the part of local fire departments to meet the requirements of Act of 19 is consistent with the lower priority placed on these activities by the departments that submitted answers to question six in the closed choice portion of the survey.

Building code related services and permits for hazardous processes are the least desirable services that the AFMO could offer.

The survey instrument and the data generated from the response to the survey are included in Appendix A.

## DISCUSSION

The results of this research project demonstrate that the majority of Arkansas Fire Departments responding to the survey are incapable of adequately fulfilling the tasks of fire code enforcement and fire investigation. The statements made by Captain Bill Young of the ASP cited in the Background and Significance Section “that rural areas almost without exception do not have qualified inspectors” has been proven true. The majority of fire departments responding to this survey, by their own admission, are unqualified and ill equipped for the task of performing fire code enforcement inspections.

The AFPC, the cornerstone of fire code enforcement activity is immediately accessible to only forty six point five percent of participating fire departments. The AFPC is the most important component in any code enforcement scenario. Without its presence the process of fire code enforcement is made impossible. The lack of fire department access to the fire code uncovered in the survey lends validity to the results of the Garland County Arkansas study where six of ten fire departments surveyed did not have a copy of the AFPC.

Basic fire code enforcement functions mandated by state law go unfulfilled in sixty one point two percent of fire districts surveyed.” The problems associated with conducting fire code enforcement inspections have historic roots. Captain W.A. Tudor of ASP acknowledged these same problems in memorandum from 1971 cited earlier in this research project. A lack of motivation in the ASP and the Arkansas Fire Service to conduct mandatory inspections of educational occupancies has led to a serious fire code enforcement problem. This inattention places at risk the health and welfare of children who attend schools or child care facilities in these jurisdictions.

A majority of surveyed fire departments have a well founded sense of inadequacy concerning their levels of code enforcement training. Well over fifty percent of surveyed departments stated that they had no adequately trained personnel capable of enforcing the AFPC, nor did a like number of counties have qualified inspectors available to fire departments for the resolution of code compliance problems. These statistics are consistent with the lack of available training in the State of Arkansas concerning the process of fire code enforcement.

Among the most revealing statistics was the low number of fire departments that have personnel who have received at least eighty hours of code enforcement training at the National Fire Academy or through the Southern Building Code Congress. Only nineteen point eight percent of surveyed fire departments have personnel trained in the process of fire code enforcement at this level. It is important to note that although fire departments feel unqualified to conduct fire code enforcement inspections they realize that it is a needed function. Code enforcement training and fire code enforcement were the third and fourth most desirable services chosen by surveyed fire departments.

The vast majority of surveyed fire departments, eighty one point nine percent, stated that they were conducting fire origin and cause investigations at the scene of every structure fire. It is evident that these fire departments understand the necessity of fire origin and cause investigations. However, the training of some fire department investigators is inadequate. The problem is especially highlighted by the small number of fire departments that employ NFPA 921 as a fire investigation guide. At least one third of fire departments responding to this survey do not have or have access to capable fire investigators.

After reviewing the results of the research project, the authors interpretation of the study is as follows:

The majority of surveyed Arkansas Fire Departments are:

1. Ill trained to perform fire code enforcement functions.
2. Ill equipped to perform fire code enforcement functions.
3. Unable to access qualified fire inspectors.
4. Not performing mandated inspections of educational occupancies.

5. Conducting fire origin and cause investigations at structure fires.
6. Not utilizing NFPA 921 when performing these fire investigations.
7. Unable to easily access qualified fire investigators.
8. Aware of their need for proper training

The organizational implications to HSFD are:

1. HSFD must continue to deal with unusual fire investigation and code enforcement problems through its own resources.
2. HSFD will continue to deal with the problems and deficiencies associated with little or no code enforcement in future annexed areas until the AFMO is sufficiently funded and staffed.
3. Change will not come to the AFMO in the form of increased services without an increase in funding and staffing.
4. The problems associated with a lack of code enforcement in non incorporated areas are wide spread and not a local phenomenon.

## RECOMMENDATIONS

Until the State of Arkansas properly funds and staffs the AFMO no significant changes concerning the enforcement of AFPC or the support of fire investigations will occur statewide. HSFD must strengthen its code enforcement relationship with local fire departments and foster efforts to begin the process of fire code enforcement in these localities.

The problems facing the majority of surveyed Arkansas Fire Departments regarding the enforcement of fire related codes and laws cannot be solved of their accord. The only feasible remedy is to increase levels of staffing and funding at the AFMO. The necessary infrastructure must be created within state government to address the problems identified during this research process. Code enforcement and fire investigation training must be made accessible to all Arkansas Fire Departments, classes must be offered at convenient locations on a regional basis. The results of the survey demonstrate that surveyed fire departments desire to be trained in and want the State of Arkansas to enforce the AFPC. It is also true that these same departments have a strong desire to be properly trained to investigate the cause of fires occurring in their jurisdictions. Above all other desires these fire departments wish that the State of Arkansas would provide fire investigation services to their jurisdictions.

HSFD should inform our legislative delegation about the problems identified in this research project. Mobilizing the Arkansas Fire Service will be necessary to bring about change that would establish the proper level of staffing and funding for the AFMO.

## REFERENCES

- Almond, George (1999) Fire and Crime Fire Chief (Vol. 42 No. 8, p.122)
- Arkansas Fire Academy (1999) Spring 2000 Training Schedule Fire Watch (Vol. 19 No. 2, p. 5)
- Brannigan, Francis (1995). Building Construction For The Fire Service (3<sup>rd</sup> ed.). Quincy, MA : National Fire Protection Assoc.
- Brannigan, Francis (1999). Preplanning Building Hazards. Fire Engineering (Vol. 152 No. 1-12)
- Brannigan, Vincent (1999) Arson, Scientific Evidence and the Daubert Case. Fire Chief. (Vol. 42 No. 8, p. 98)
- Corbett, Glenn (1999). So you have to Inspect a Movie Theater. Fire Engineering (Vol. 152 No. 2, p. 16)
- Dehaan, John (1991) Kirk's Fire Investigation (3<sup>rd</sup>). Englewood Cliffs, NJ : Prentice Hall
- Duval, Robert (1999) Desktop Detective. Fire Chief (Vol. 43 No. 7, p. 68)
- Fire Hazard Inspections, Acts 1989, No.411, AR. Stat. Ann. 21-106 (1989).
- Fire Prevention Act, Acts 1955, No. 254, AR. Stat. Ann. 12-13-101 - 12-13-116 (1955).
- Fire Protection Services Program Act, Acts 1991, No. 833 AR. Stat. Ann. 20-20-801 - 20-20-809 (1991).
- Huff, Timothy (1999) Filicide by Fire. Fire Chief (Vol. 43 No. 7, p. 66)
- National Fire Protection Association. (1998) NFPA 921 Guide for Fire and Explosion Investigations .Quincy, MA : National Fire Protection Assoc.
- National Fire Protection Association. (1998) NFPA 1031 The Standard for Professional Qualifications for Fire Inspector and Plan Examiner (pp. 5-7).Quincy, MA : National Fire Protection Assoc.

National Fire Protection Association. (1998) NFPA 1033 The Standard for Professional Qualifications for Fire Investigator (pp. 6-9). Quincy, MA : National Fire Protection Assoc.

Naylis, Gerard (1999). Storage Practices. Fire Engineering (Vol. 152 No. 2, p. 18)

Wallace, Richard (Ed.).(1994) The NFPA Inspection Manual (7<sup>th</sup> ed.). Quincy, MA : National Fire Protection Assoc.

Young, Bill (1999) Duties and Responsibilities, Assessment of Compliance’ (Report Arkansas State Police No.46, pp. 2 & 6)

## APPENDIX A

ARKANSAS FIRE SERVICE  
 CODE ENFORCEMENT AND FIRE INVESTIGATION  
 SURVEY

This survey is intended to provide information regarding the needs of the Arkansas Fire Service concerning code compliance and fire investigation activities. It is also intended to identify the services most needed from the Arkansas State Fire Marshals Office. Please answer each of the following eleven questions by circling either TRUE or FALSE depending upon the validity of each statement as it applies to your fire department..

1. At least one person on my fire department can correctly interpret and apply the Arkansas State Fire Code.

TRUE	FALSE
64 55.2%	52 44.8%

2. My county has qualified inspectors that I can call on to resolve fire and building code violations.

TRUE	FALSE	N/A
47 40.5%	66 56.9%	3 2.6%

3. I have immediate access to a copy of the 1999 Arkansas Fire Prevention Code.

TRUE	FALSE
54 46.5%	62 53.5%

4. At least one person in my fire department is adequately trained to enforce the Arkansas Fire Prevention Code.

TRUE	FALSE	N/A
48 41.4%	67 57.8	1 .8

5. At least one person on my fire department has had at least 80 hrs of code compliance training at the National Fire Academy or the Standard Building Code Congress.

TRUE	FALSE
23 19.8%	93 80.2%

6. My fire department has a regular program of inspections that attempts to check every daycare and educational occupancy in our response area at least once a year.

TRUE	FALSE
45 38.8%	71 61.2%

7. My fire department normally conducts fire origin and cause investigations at the scene of every structure fire.

TRUE	FALSE
95 81.9%	21 18.1%

8. At least one person on my fire department has been adequately trained to conduct a fire origin and cause investigation.

TRUE	FALSE

77 66.4            39 33.6%

9. It is a standard operating procedure in my fire department to use NFPA 921 as the guide to conduct fire origin and cause investigations.

TRUE	FALSE	N/A
43 37.1%	71 61.2	2 1.7%

10. In my county there are qualified fire investigators that I can call on to conduct fire origin and cause investigations.

TRUE	FALSE	N/A
67 57.8	46 39.7	3 2.5%

The final question in the survey is followed by ten choices. Each choice has a blank space to its immediate right. Place one number ranging from one (1) to ten (10) in each of the blanks. The number one (1) should represent the service your fire department most needs from the fire marshal's office. Each higher number you choose should represent choices of less importance with ten (10) being the service that is least important to your fire department.

The services most needed by my fire department from the Arkansas State Fire Marshal's Office are:

	TOTALS	NO RESPONSE
• Fire Origin and Cause Investigations	428	10
• Daycare Code Compliance Inspections	577	16
• Flammable Liquids Storage Tank Inspections	513	15
• Educational Occupancy Inspections	546	18
• Fire Code Enforcement	495	08
• Building Code Enforcement	579	14
• Plans Review for New Construction	608	14
• Permits for Hazardous Processes	608	13
• Code Enforcement Training	466	10
• Fire Investigation Training	351	09